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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,564	11/20/2003	Mitsuharu Imaseki	NGW-013	3551
959 7590 12/21/2006 LAHIVE & COCKFIELD, LLP ONE POST OFFICE SQUARE BOSTON, MA 02109-2127			EXAMINER RUTHKOSKY, MARK	
			ART UNIT	PAPER NUMBER
			1745	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		12/21/2006	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/719,564

Applicant(s)

IMASEKI ET AL.

Examiner

Mark Ruthkosky

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 11/20/2003.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

The information disclosure statement filed 11/20/2003 has been placed in the application file, and the information referred to therein has been considered as to the merits.

### ***Drawings***

The drawings filed on 11/20/2003 have been approved.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an

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international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1 and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Ap et al. (US 6,595,433).

The instant claims are to a cooling structure for a fuel cell vehicle comprising a fuel cell a drive motor for driving the fuel cell vehicle using the energy generated by the fuel cell; a first cooling flow passage for cooling the fuel cell using a first cooling medium cooled by a main radiator; and a second cooling flow passage for cooling at least one of the drive motor and a power control unit of the drive motor using a second cooling medium cooled by an auxiliary radiator, wherein the main radiator is disposed in a central portion of a front surface of a vehicle body and the auxiliary radiator is disposed on the front surface of the vehicle body in such a manner that its heat exchange surface is situated shifted in a vehicle-width direction so as to prevent it from being overlapped with a heat exchange surface of the main radiator.

Ap et al. (US 6,595,433) teaches a cooling structure for a fuel cell vehicle comprising a fuel cell a drive motor for driving the fuel cell vehicle using the energy generated by the fuel cell; a first cooling flow passage for cooling the fuel cell using a first cooling medium cooled by a main radiator; and a second cooling flow passage for cooling at least one of the drive motor and a power control unit of the drive motor using a second cooling medium cooled by an auxiliary radiator (see figures 1-4, claims 1-13, and paragraphs 46-57.) The front surface of the vehicle is considered to be the direction of airflow. The main radiator is disposed in a central portion of a front surface of a vehicle body and the auxiliary radiator is disposed on the front

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surface of the vehicle body in such a manner that its heat exchange surface is situated shifted in a vehicle-width direction so as to prevent it from being overlapped with a heat exchange surface of the main radiator (see figures 3-4.) The radiator is divided into two parts that are sealed from one another and together. Thus, the claims are anticipated.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 5, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ap et al. (US 6,595,433 and 2002/0053216) in view of Hobbensiefken (US 3,929,202.)

Ap et al. (US 6,595,433) teaches a cooling structure for a fuel cell vehicle comprising a fuel cell a drive motor for driving the fuel cell vehicle using the energy generated by the fuel cell; a first cooling flow passage for cooling the fuel cell using a first cooling medium cooled by a main radiator; and a second cooling flow passage for cooling at least one of the drive motor and a power control unit of the drive motor using a second cooling medium cooled by an auxiliary radiator, as previously noted and incorporated. The front surface of the vehicle is considered to be the direction of airflow. The main radiator is disposed in a central portion of a front surface of a vehicle body and the auxiliary radiator is disposed on the front surface of the vehicle body in such a manner that its heat exchange surface is situated shifted in a vehicle-width direction so as to prevent it from being overlapped with a heat exchange surface of the main

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radiator (see figures 3-4.) The radiator is divided into two parts that are sealed from one another and together.

Ap et al. (US 6,595,433 and 2002/0053216) does not teach the radiator to face obliquely forwardly and outwardly. It would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the angle of the radiator with respect to the airflow in order to achieve the desired amount of air for cooling while balancing the aerodynamics of the vehicle. For example, Hobbensiefken (US 3,929,202) teaches a cooling structure for a vehicle comprising a motor for driving the vehicle. Two main radiators are disposed on the front surface of a vehicle body in such a manner that the heat exchange surfaces are shifted in a vehicle-width direction so as to prevent them from being overlapped. The radiators have an angle extending at an oblique angle that is forward at the lower end and upward (claims 1-3, col. 4, lines 1-20, and figures 1-2.) The radiators decrease drag on the vehicle while allowing for the cooling of the motor. The artesian would have found the claimed invention to be obvious in light of the teachings of the references.

With regard to claim 9, positioning of the auxiliary radiator below the main radiator would be obvious to one of ordinary skill in the art at the time of the invention as the prior art appreciates having the radiators exposed to airflow in order to effectively cool the motor and the fuel cell. Having the radiators exposed to the flow of air without overlapping the other would allow for more airflow to each radiator. Positioning one radiator below the other is merely a choice of design as the position allows for both radiators to be cooled by the air flowing across the vehicle.

Claims 2, 4, 6, 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ap et al. (US 6,595,433 and 2002/0053216) in view of Ap (US 6,448,535) and further in view of Hobbensiefken (US 3,929,202) and Morinaka et al. (US 4,632,206.)

Ap et al. (US 6,595,433) teaches a cooling structure for a fuel cell vehicle comprising a fuel cell a drive motor for driving the fuel cell vehicle using the energy generated by the fuel cell; a first cooling flow passage for cooling the fuel cell using a first cooling medium cooled by a main radiator; and a second cooling flow passage for cooling at least one of the drive motor and a power control unit of the drive motor using a second cooling medium cooled by an auxiliary radiator. The main radiator is disposed in a central portion of a front surface of a vehicle body and the auxiliary radiator is disposed on the front surface of the vehicle body in such a manner that its heat exchange surface is situated shifted in a vehicle-width direction so as to prevent it from being overlapped with a heat exchange surface of the main radiator (see figures 3-4.) The radiator is divided into two parts that are sealed from one another and together.

Ap et al. (US 6,595,433) does not teach the main radiator is disposed on a front surface of the vehicle body so as to extend substantially over a vehicle-width-direction entire area existing between a pair of right and left main frames respectively disposed along back-and-forth direction of the vehicle body, and the auxiliary radiator is disposed on the front surface of the vehicle body in such a manner that it is situated outside the main frames. Ap (US 6,448,535) teaches a cooling structure for a fuel cell vehicle comprising a fuel cell a drive motor for driving the fuel cell vehicle using the energy generated by the fuel cell; a first cooling flow passage for cooling the fuel cell using a first cooling medium cooled by a main radiator; and a second cooling flow passage for cooling at least one of the drive motor and a power control unit of the drive motor

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using a second cooling medium cooled by an auxiliary radiator. The main radiator is disposed in a central portion of a front surface of a vehicle body so as to extend substantially over a vehicle-width-direction and the auxiliary radiator is disposed on the side surface of the vehicle body in such a manner that its heat exchange surface is situated shifted in a vehicle-width direction so as to prevent it from being overlapped with a heat exchange surface of the main radiator (see figures 1 and 4; col. 4, lines 35-45.)

Ap et al. (US 6,595,433 and 2002/0053216) and Ap (US 6,448,535) do not teach the radiator to face obliquely forwardly and outwardly. It would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the angle of the radiator with respect to the airflow in order to achieve the desired amount of air for cooling while balancing the aerodynamics of the vehicle. For example, Hobbensiefken (US 3,929,202) teaches a cooling structure for a vehicle comprising a motor for driving the vehicle. Two main radiators are disposed on the front surface of a vehicle body in such a manner that the heat exchange surfaces are shifted in a vehicle-width direction so as to prevent them from being overlapped. The radiators have an angle extending at an oblique angle that is forward at the lower end and upward (claims 1-3, col. 4, lines 1-20, and figures 1-2.) The radiators decrease drag on the vehicle while allowing for the cooling of the motor. In addition, Morinaka et al. (US 4,632,206) teaches a radiator arrangement for cooling a vehicle motor wherein the radiators are disclosed at oblique angles (figures 3-4 and the paragraphs bridging cols. 2-3.) The arrangement includes the radiator facing forwardly and outwardly from the front of the vehicle. From these teachings, it would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the angle of the radiator with respect to the airflow in order to achieve the desired amount of air



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for cooling while balancing the aerodynamics of the vehicle. The artisan would have found the claimed invention to be obvious in light of the teachings of the references.

With regard to claim 10, positioning of the auxiliary radiator below the main radiator would be obvious to one of ordinary skill in the art at the time of the invention as the prior art appreciates having the radiators exposed to airflow in order to effectively cool the motor and the fuel cell. Having the radiators exposed to the flow of air without overlapping the other would allow for more airflow to each radiator. Positioning one radiator below the other is merely a choice of design as the position allows for both radiators to be cooled by the air flowing across the vehicle.

#### ***Examiner Correspondence***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 571-272-1291. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-6:30.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free.)

Mark Ruthkosky

Primary Patent Examiner

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A handwritten signature in black ink, appearing to read "Mark Ruthkosky".

12-15-2006